Permit to Construct No. P-2007.0177

Proposed for Public Comment

Ash Grove Cement Company

Inkom, Idaho

Facility ID No. 005-00004

November 8, 2007

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Permit Writer

The purpose of this Statement of Basis is to satisfy the requirements of IDAPA 58.01.01.200, Rules for the Control of Air Pollution in Idaho, for issuing air permits.

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Acronyms, Units, and Chemical Nomenclature

acfm	actual cubic feet per minute
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
ASTM	American Society for Testing and Materials
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
gr	grain (1 lb = 7,000 grains)
dscf	dry standard cubic feet
EPA	U.S. Environmental Protection Agency
HAPs	Hazardous Air Pollutants
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
km	kilometer
lb/hr	pound per hour
MACT	Maximum Achievable Control Technology
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
PC	permit condition
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
Rules	Rules for the Control of Air Pollution in Idaho
scf	standard cubic feet
SIC	Standard Industrial Classification
SO_2	sulfur dioxide
SO_x	sulfur oxides
T/yr	tons per year
$\mu g/m^3$	micrograms per cubic meter
UTM	Universal Transverse Mercator
VOC	volatile organic compound

1. FACILITY INFORMATION

1.1 Facility Description

Ash Grove Cement Company (Ash Grove) manufactures Portland cement. The Inkom facility is located adjacent to the quarry from which raw limestone, MgO limestone, clay, and shale are mined. The raw materials are removed from the bedrock by blasting with explosives, then bulldozing the rock to the quarry floor, and hauling the rock to the jaw crusher. The silica and iron ore are hauled to the plant and stockpiled. These materials are also crushed as needed.

The mined material is usually too large to be used in cement manufacturing at this point, so further processing is required. Material enters a crusher and is screened until the appropriate size is obtained. When the rock reaches the desirable size it is transported by a conveyor belt to storage silos for later use in the cement making process. The rock from the silos is measured, and then transported to a ball mill by conveyor belts. The material is ground, forming homogeneous slurry of water and rock.

The slurry is fed to the back of the kiln, which declines at a 4% slope. In order to form clinker the slurry must be heated to incipient fusion where calcination takes place. To perform the energy intensive task of making clinker, gases flowing counter current to the material flow are heated to an excess of 1650°C (3,000°F) by fossil and used fuels. Currently, the primary fuels used by the Inkom plant kiln are coal and tires.

The chemically reacting raw materials reach a temperature of approximately 1538°C (2800°F) before exiting the kiln and entering the clinker cooler.

The clinker exits the kilns at temperatures of 2000°F. It enters clinker coolers beneath the kiln where the heat is transferred from the clinker to the secondary air that reenters the kiln. All the forced air entering the cooler is utilized in the kiln as primary and secondary air for fuel combustion. The clinker leaves the cooler at around 260°C (500°F). Drag chains, elevators, and conveyor belts are used to transport the warm clinker from the clinker cooler to clinker storage.

Clinker may also be imported from other plants by truck and railcar to the facility and belly-dumped into an enclosed below-grade hopper. From the hopper it is transferred to one of three storage silos or to the clinker shed which is an outdoor pile that is mostly enclosed with the exception of a portion of the north end. This allows for increased operational flexibility at the facility to either make the clinker on-site and/or import the clinker from off-site.

The clinker is transported from the storage areas to the three finish ball mills where it is ground with gypsum to make cement. Separators are used to return oversized particles back to the mills for additional grinding. The plant can grind 450,000 tons of clinker per year. The cement is then pneumatically conveyed to the cement storage silos. Upon withdrawal from the silos, the cement is shipped bulk to customers.

Ash Grove uses two electrostatic precipitators (ESPs) to control particulate matter emissions from its two cement kilns. The dust that is collected by the ESPs is referred to as cement kiln dust or "CKD." For a more detailed description of the facility, refer to the Statement of Basis for the Tier I operating permit.

1.2 Permitting History

This PTC is for a modification at an existing Tier I facility. See the current Tier I permit statement of basis for the permitting history.

2. APPLICATION SCOPE

The purpose of this permit is: 1) to remove the limit on the quantity of imported clinker that can be unloaded annually; and 2) to install a conveyor to allow imported clinker to be diverted to the clinker storage shed rather than being limited to only the clinker silos. This will allow for increased operational flexibility at the facility to: 1) make the clinker on-site; 2) import the clinker from off-site; or 3) some combination of the two.

2.1 Application Chronology

August 27, 2007	PTC application and application fee were received by DEQ
September 21, 2007	PTC application was declared complete
October 24, 2007	Draft PTC was issued for Peer and Regional Office Review
October 26, 2007	Draft PTC was issued to Ash Grove for review
November 8, 2007	Comments were received from Ash Grove

3. TECHNICAL ANALYSIS

3.1 Emission Units and Control Devices

Table 3.1 EMISSION UNIT AND CONTROL DEVICE INFORMATION

ID No. (Source Codes)	Emission Unit Description	Emissions Controls
F49d	Truck/railcar to hopper	Hopper pit
F49e	Hopper to conveyor	Cover over conveyor, partial cover at transfer point, partial control by Baghouse No. 2
F49f	Conveyor to No. 2 elevator, 100 tons per hour	Baghouse No. 2
F61, F62, F63	Drag Conveyor to storage silos	Baghouse No. 2
F56a, F57	Conveyor to clinker shed	Baghouse No. 2, partial enclosure

3.2 Emissions Inventory

This PTC is 1) for an increase in the allowable quantity of clinker that can be received annually from off-site and 2) for the installation of a conveyor to transfer this received clinker from existing bucket elevator #2 to the clinker stacking belt. The allowable hourly processing rate for the clinker unloading system is unchanged, the allowable amount of clinker that can be processed into cement is unchanged, and the allowable amount of cement that can be produced is not changed. Following issuance of this PTC, the 55,000 tons/yr annual limit on clinker received from truck and railcar unloading operations (Tier I Condition 11.7(a)) would be removed and the quantity of clinker that could be received from the

truck and railcar unloading operations would then be effectively limited by the facility's annual cement production limit of 394,106 tons/yr (Tier I Condition 13.4).

Ash Grove has provided emissions estimates to show that this project would result in a potential increase of 2.7 tons/yr of PM_{10} and 3.0 tons/yr of PM from the increased clinker unloading operation alone. The estimates were reviewed and found to be consistent with DEQ methods. Refer to the emissions estimate tables in the Appendix for details. It is noted that Ash Grove did not take credit for any reduction in emissions that will result from a decrease in on-site clinker production when clinker received from off-site is used in its place. Considering that PM_{10} emissions from the kilns alone are over 100 tons/yr, it is apparent that any reduction in kiln operations, as a result of receiving clinker from off-site, will result in a substantial overall decrease in PM/PM_{10} emissions from the facility as a result of this project. To get a better picture of overall emissions reductions from reduced kiln operations, refer to Table C-3 in the Appendix which is from the Tier I operating permit renewal application.

3.3 Ambient Air Quality Impact Analysis

Emissions will not increase as a result of this project, therefore modeling is not required for this project. The 2.7 ton/yr increase in PM_{10} emissions from the increased offloading process for clinker received from an off-site facility is far less than the resulting reduction in PM_{10} emissions that is expected to occur as a result of not operating the kilns to produce clinker on-site. Likewise, TAPs will not increase either. It is noted that even though modeling is not required for this particular project, the operating scenario represented by this project will be considered in the modeling that is currently being performed for issuance of a Tier II Operating Permit.

4. REGULATORY REVIEW

4.1 Attainment Designation (40 CFR 81.313)

The facility is located in Bannock County, and the Inkom area where this facility is located is designated as attainment or unclassifiable for PM_{10}, $PM_{2.5}$, CO, NO_2, SO_X, and Ozone. Reference 40 CFR 81.313.

4.2 Permit to Construct (IDAPA 58.01.01.201)

A permit to construct is required prior to construction or modification of any stationary source, facility, major facility, or major modification unless the source is exempt per IDAPA 58.01.01.220-223. For this project, the facility has requested a PTC and Tier I modification/amendment, and this will be done using the procedures under IDAPA 58.01.01.209.05.c.

4.3 Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70)

The Ash Grove facility is a designated facility as defined in IDAPA 58.01.01.006.27 (Portland Cement Plant). Under the Title V Program, the facility is classified as a major facility and AIRS Facility Subsystem classification is "A" because potential emissions of PM_{10}, SO_2, NO_x, and CO are greater than 100 tons per year. A revised AIRS table is not included with this statement of basis since there are no changes to the facility classification as a result of this project.

4.4 PSD Classification (40 CFR 52.21)

The Ash Grove facility is a designated facility as defined in IDAPA 58.01.01.006.27 (Portland Cement Plant). Under the PSD Program, the facility is classified as a major facility because the facility's PTE is greater than 100 T/yr.

Since Ash Grove is a major facility under the PSD program, it needs to be determined if this project will result in a significant emissions increase and, therefore, require additional review under 40 CFR 52.21 (hereafter referred to as 52.21). The "project", as defined by 52.21(b)(52) means "a physical change in, or change in the method of operation of, an existing major stationary source." For purposes of this analysis, the "project" includes changes associated with the following processes, and no other processes at the facility are considered to be affected by this project:

- clinker unloading operations from trucks and railcars

As described in the Emissions Inventory section above, and as shown in the Appendix, the potential to emit (PTE) from the entire modified clinker unloading process for PM and PM_{10} would be 3.0 and 2.7 tons/yr. Since the PTE is less than the PM and PM_{10} significant levels of 25 and 15 tons/yr respectively, it is readily apparent that this project could not result in a significant emissions increase. Therefore, this project is not a significant modification and further review under 52.21 is not required.

4.5 NSPS Applicability (40 CFR 60)

40 CFR 60 Subpart F, Standards of Performance for Portland Cement Plants. Subpart F applies to the new conveyor belt installed to transfer clinker from elevator #2 to the stacking belt which conveys clinker to a stacking pipe in the clinker storage shed. Specific requirements are outlined below:

60.60, Applicability and Designation of Affected Facility. The provisions of Subpart F are applicable to the following affected facilities in Portland cement plants: clinker storage, conveyor transfer points, bulk loading and unloading systems. For this project, the following is a new affected facility under Subpart F: new conveyor belt installed to transfer clinker from elevator #2 to the stacking belt which conveys clinker to a stacking pipe in the clinker storage shed.

60.62, Standard for Particulate Matter. 60.62(a) and 60.62(b) do not apply. 60.62(c) does apply to the new conveyor as follows:

> "(c) On and after the date on which the performance test required to be conducted by 60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from any affected facility other than the kiln and clinker cooler any gasses which exhibit 10 percent opacity, or greater."

60.63, Monitoring of Operations. This rule applies to the kilns and kiln coolers, but it does not directly apply to this project.

60.64, Test Methods and Procedures. 60.64(a) and 60.64(b)(4) apply, and an initial opacity performance test of the new conveyor must be performed as follows:

> "(a) In conducting the performance tests required in 60.8, the owner or operator shall use as reference methods and procedures the test methods in appendix A of this part or other methods and procedures as specified in this section, except as provided in 60.8(b)."
>
> "(b) The owner or operator shall determine compliance with the particulate matter standard in 60.62 as follows: (4) Method 9 and the procedures in 60.11 shall be used to determine opacity."

63.65, Recordkeeping and Reporting Requirements. The requirements of 63.65 do not apply to this project.

40 CFR 60, Subpart A, General Provisions. Any other applicable requirements, including but not limited to notifications, monitoring, recordkeeping, etc., as specified in Subpart A, will must also be complied with for the new affected facility (i.e., the new conveyor). As noted above, this includes compliance with 60.8 for the initial opacity performance test and initial notification(s) per 60.7 for the new conveyor.

4.6 NESHAP Applicability (40 CFR 61)

NESHAP requirements under Part 61 do not apply to Ash Grove.

4.7 MACT Applicability (40 CFR 63)

40 CFR 63 Subpart LLL, National Emission Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry. The Tier I operating permit statement of basis classifies the Ash Grove Inkom facility as an area source of HAPs. Therefore, no requirements of this NESHAP (40 CFR 63 Subpart LLL) are applicable to the new conveyor addressed by this PTC. The only affected units at an area source are the kilns.

4.8 CAM Applicability (40 CFR 64)

The requirements of Part 64 do not apply to this project.

4.9 Permit Conditions Review

This section describes only those permit conditions (PC) that have been added, revised, modified or deleted as a result of this permitting action. All other permit conditions remain unchanged.

Existing Conditions 2.3 and 2.4 of PTC No. P-050314 issued on November 10, 2005. These existing conditions are deleted. A regulatory analysis has been provided that shows compliance with all requirements without these conditions. It is noted that clinker unloading operations from trucks and railcars are effectively limited by the existing 394,106 tons/yr permit limit for facility's annual cement production (Tier I Condition 13.4). For more information, refer to the description provided in the Emission Inventory section above.

Deleted Condition 2.3 in PTC No. P-050314 issued 11/10/05, "Clinker Throughput Limits"

The clinker from truck and railcar unloading operations shall not exceed 55,000 tons per any consecutive 12-month period.

Deleted Condition 2.4 in PTC No. P-050314 issued 11/10/05, "Throughput Monitoring"

The permittee shall monitor and record the amount of clinker unloaded for each month and for the most recent 12-month period. Records kept on site for the most recent two-year period and shall be made available to DEQ representatives upon request.

New Conditions 2.3 and 2.4. As described in the statement of basis for PTC No. P-050314, the clinker unloading system (plus the new conveyor) is subject to the NSPS requirements of 40 CFR 60 Subpart F.

Therefore the NSPS opacity limit specified by 60.62(c) is added to the permit. Also, the performance testing requirements of 60.8 and 60.64 are changed to make applicability of initial test requirements for the new conveyor more clear, as follows:

New Condition 2.3, Clinker Unloading System, Transfer Point Opacity Limit - NSPS

In accordance with 40 CFR 60.62(c), the permittee shall not cause to be discharged into the atmosphere from any affected facility any gases which exhibit 10% opacity, or greater. Affected facilities that are subject to this requirement include the following sources: clinker unloading system. Opacity shall be determined using the procedures specified in 40 CFR 60.64(b) and IDAPA 58.01.01.625 (Rules for the Control of Air Pollution in Idaho).

Existing Condition 2.5, Performance Test

Within 60 days of achieving the maximum production rate of the clinker unloading system, but not later than 180 days after issuance of this permit, the permittee shall conduct a performance test in accordance with 40 CFR 60 Subpart F and 40 CFR 60.8.

Revised Condition 2.4, Clinker Unloading System Performance Test - NSPS

Within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup of such facility and at such other times as may be required by the Administrator under section 114 of the Act, the permittee shall conduct a performance test as required by 40 CFR 60.8, 60.62(c) and 60.64, and in accordance with General Provision 6 of this permit and IDAPA 16.01.01.157, to demonstrate compliance with Permit Condition 2.3 of this permit. The affected facilities that require an initial test within 60/180 days include the following: the conveyor belt installed to transfer clinker from elevator #2 to the stacking belt which conveys clinker to a stacking pipe in the clinker storage shed (source codes F56a and F57). The affected facilities for which the Administrator may require a performance test under section 114 of the Act include the following: clinker unloading system.

5. PERMIT FEES

Table 5.1 lists the processing fee associated with this permitting action. The facility is subject to a processing fee of $1000.00 because the project's permitted emission increase is less than one ton per year. Refer to the chronology for fee receipt dates.

Table 5.1 PTC PROCESSING FEE TABLE

Emissions Inventory			
Pollutant	**Annual Emissions Increase (T/yr)**	**Annual Emissions Reduction (T/yr)***	**Annual Emissions Change (T/yr)**
NO_X	0.0	0	0.0
SO2	0.0	0	0.0
CO	0.0	0	0.0
PM10	0.0	0	0.0
VOC	0.0	0	0.0
HAPS	0.0	0	0.0
Total:	0.0	0	**0.0**
Fee Due	**$ 1000.00**		

* Emissions following this project are expected to decrease from reduced kiln utilization, however, the actual reductions have not been estimated.

6. PUBLIC COMMENT

A 30-day comment period will be provided for the public, affected states and tribes on the draft PTC and Tier I operating permit amendment.

IDAPA 58.01.01.008.01 defines affected states as: "All states: whose air quality may be affected by the emissions of the Tier I source and that are contiguous to Idaho; or that are within 50 miles of the Tier I source." A review of the site location information included in the permit application indicate that the facility is located within 50 miles of tribal land. Therefore, the Fort Hall Indian Reservation will be provided an opportunity to comment on the draft PTC and the Tier I operating permit amendment. The state of Utah is located 53 miles from the facility and is not subject to notification. The EPA will also be provided with an opportunity to comment on the proposed Tier I amendment, and this will occur concurrently with the 30-day comment period in accordance with IDAPA 58.01.01.209.05.c.iv and 366.

Appendix – Emissions Inventory

Table 1. PM10 Emissions Summary

			Hourly		Daily		Annual	
Current Approved Operations	Emission Factor	Ref.	Throughput	Emissions	Throughput	Emissions	Throughput	Emissions
Bellydump to hopper	0.0001 lb/ton	a	100 tons/hr	0.01 lb/hr	500 tons/day	0.05 lb/day	55,000 tons/yr	0.003 tons/yr
Hopper to conveyor 1	0.0011 lb/ton	a	100 tons/hr	0.11 lb/hr	500 tons/day	0.55 lb/day	55,000 tons/yr	0.030 tons/yr
Conveyor 1 to elevator	0.0011 lb/ton	a	100 tons/hr	0.11 lb/hr	500 tons/day	0.55 lb/day	55,000 tons/yr	0.030 tons/yr
Stacker belt to stacker	0.0001 lb/ton	b	100 tons/hr	0.006 lb/hr	2,400 tons/day	0.13 lb/day	304,848 tons/yr	0.008 tons/yr
Stacker to clinker pile	0.0001 lb/ton	b	100 tons/hr	0.006 lb/hr	2,400 tons/day	0.13 lb/day	304,848 tons/yr	0.008 tons/yr
Baghouse #2	0.61 lb/hr	c	1 hr	0.61 lb/hr	5 hours	3.07 lb/day	550 hours	0.169 tons/yr
Total				0.86 lb/hr		4.49 lb/day		0.25 tons/yr
Proposed Operation	Emission Factor	Ref.	Throughput	Emissions	Throughput	Emissions	Throughput	Emissions
Bellydump to hopper	0.0001 lb/ton	a	100 tons/hr	0.01 lb/hr	2,400 tons/day	0.24 lb/day	360,000 tons/yr	0.018 tons/yr
Hopper to conveyor 1	0.0011 lb/ton	a	100 tons/hr	0.11 lb/hr	2,400 tons/day	2.64 lb/day	360,000 tons/yr	0.198 tons/yr
Conveyor 1 to elevator	0.0001 lb/ton	b	100 tons/hr	0.01 lb/hr	2,400 tons/day	0.13 lb/day	360,000 tons/yr	0.010 tons/yr
Elevator to conveyor 2	0.0001 lb/ton	b	100 tons/hr	0.01 lb/hr	2,400 tons/day	0.13 lb/day	360,000 tons/yr	0.010 tons/yr
Conveyor 2 to stacker belt	0.0001 lb/ton	b	100 tons/hr	0.01 lb/hr	2,400 tons/day	0.13 lb/day	360,000 tons/yr	0.010 tons/yr
Stacker belt to stacker	0.0001 lb/ton	b	100 tons/hr	0.006 lb/hr	2,400 tons/day	0.13 lb/day	360,000 tons/yr	0.010 tons/yr
Stacker to clinker pile	0.0001 lb/ton	b	100 tons/hr	0.006 lb/hr	2,400 tons/day	0.13 lb/day	360,000 tons/yr	0.010 tons/yr
Baghouse #2	0.61 lb/hr	c	1 hr	0.61 lb/hr	24 hours	14.76 lb/day	8,760 hours	2.693 tons/yr
Total				0.76 lb/hr		18.30 lb/hr		2.96 tons/yr
Increase	Emission Factor	Ref.	Throughput	Emissions	Throughput	Emissions	Throughput	Emissions
Bellydump to hopper	0.0001 lb/ton	a	0 tons/hr	0.00 lb/hr	1,900 tons/day	0.19 lb/day	305,000 tons/yr	0.015 tons/yr
Hopper to conveyor 1	0.0011 lb/ton	a	0 tons/hr	0.00 lb/hr	1,900 tons/day	2.09 lb/day	305,000 tons/yr	0.168 tons/yr
Conveyor 1 to elevator	0.0001 lb/ton	b	0 tons/hr	-0.10 lb/hr	1,900 tons/day	-0.42 lb/day	305,000 tons/yr	-0.020 tons/yr
Elevator to conveyor 2	0.0001 lb/ton	b	100 tons/hr	0.01 lb/hr	2,400 tons/day	0.13 lb/day	360,000 tons/yr	0.010 tons/yr
Conveyor 2 to stacker belt	0.0001 lb/ton	b	100 tons/hr	0.01 lb/hr	2,400 tons/day	0.13 lb/day	360,000 tons/yr	0.010 tons/yr
Stacker belt to stacker	0.0001 lb/ton	b	0 tons/hr	0.00 lb/hr	0 tons/day	0.00 lb/day	55,152 tons/yr	0.002 tons/yr
Stacker to clinker pile	0.0001 lb/ton	b	0 tons/hr	0.00 lb/hr	0 tons/day	0.00 lb/day	55,152 tons/yr	0.002 tons/yr
Baghouse #2	0.61 lb/hr	c	0 hr	0.00 lb/hr	19 hours	11.68 lb/day	8,210 hours	2.524 tons/yr
Total				-0.09 lb/hr		13.81 lb/day		2.71 tons/yr

References:

a - AP42 Table 11.19.2-2. Emission Factors for Crushed Stone Processing Operations.

b - AP42 Table 11.19.2-2. Conservatively assume 95 percent of transfer point emissions are captured and routed to a baghouse and five percent fugitive emissions.

c - Baghouse #2 limited to 0.014 grains per dry standard cubic foot.

Table 2. PM Emissions Summary

Current Approved Operations								
		Ref.	Hourly		Daily		Annual	
	Emission Factor		Throughput	Emissions	Throughput	Emissions	Throughput	Emissions
Bellydump to hopper	0.0003 lb/ton	a	100 tons/hr	0.03 lb/hr	500 tons/day	0.15 lb/day	55,000 tons/yr	0.008 tons/yr
Hopper to conveyor 1	0.003 lb/ton	a	100 tons/hr	0.30 lb/hr	500 tons/day	1.50 lb/day	55,000 tons/yr	0.083 tons/yr
Conveyor 1 to elevator	0.003 lb/ton	a	100 tons/hr	0.30 lb/hr	500 tons/day	1.50 lb/day	55,000 tons/yr	0.083 tons/yr
Stacker belt to stacker	0.0002 lb/ton	b	100 tons/hr	0.015 lb/hr	2,400 tons/day	0.36 lb/day	304,848 tons/yr	0.023 tons/yr
Stacker to clinker pile	0.0002 lb/ton	b	100 tons/hr	0.015 lb/hr	2,400 tons/day	0.36 lb/day	304,848 tons/yr	0.023 tons/yr
Baghouse #2	0.61 lb/hr	c	1 hr	0.61 lb/hr	5 hours	3.07 lb/day	550 hours	0.169 tons/yr
Total				1.27 lb/hr		6.94 lb/day		0.39 tons/yr
Proposed Operation								
		Ref.	Hourly		Daily		Annual	
	Emission Factor		Throughput	Emissions	Throughput	Emissions	Throughput	Emissions
Bellydump to hopper	0.0003 lb/ton	a	100 tons/hr	0.03 lb/hr	2,400 tons/day	0.72 lb/day	360,000 tons/yr	0.054 tons/yr
Hopper to conveyor 1	0.003 lb/ton	a	100 tons/hr	0.30 lb/hr	2,400 tons/day	7.20 lb/day	360,000 tons/yr	0.540 tons/yr
Conveyor 1 to elevator	0.0002 lb/ton	b	100 tons/hr	0.02 lb/hr	2,400 tons/day	0.36 lb/day	360,000 tons/yr	0.027 tons/yr
Elevator to conveyor 2	0.0002 lb/ton	b	100 tons/hr	0.02 lb/hr	2,400 tons/day	0.36 lb/day	360,000 tons/yr	0.027 tons/yr
Conveyor 2 to stacker belt	0.0002 lb/ton	b	100 tons/hr	0.02 lb/hr	2,400 tons/day	0.36 lb/day	360,000 tons/yr	0.027 tons/yr
Stacker belt to stacker	0.0002 lb/ton	b	100 tons/hr	0.015 lb/hr	2,400 tons/day	0.36 lb/day	360,000 tons/yr	0.027 tons/yr
Stacker to clinker pile	0.0002 lb/ton	b	100 tons/hr	0.015 lb/hr	2,400 tons/day	0.36 lb/day	360,000 tons/yr	0.027 tons/yr
Baghouse #2	0.61 lb/hr	c	1 hr	0.61 lb/hr	24 hours	14.76 lb/day	8,760 hours	2.693 tons/yr
Total				1.02 lb/hr		24.48 lb/hr		3.42 lb/hr
Increase			Hourly		Daily		Annual	
	Emission Factor	Ref.	Throughput	Emissions	Throughput	Emissions	Throughput	Emissions
Bellydump to hopper	0.0003 lb/ton	a	0 tons/hr	0.00 lb/hr	1,900 tons/day	0.57 lb/day	305,000 tons/yr	0.046 tons/yr
Hopper to conveyor	0.003 lb/ton	a	0 tons/hr	0.00 lb/hr	1,900 tons/day	5.70 lb/day	305,000 tons/yr	0.458 tons/yr
Conveyor 1 to elevator	0.0001 lb/ton	b	0 tons/hr	-0.29 lb/hr	1,900 tons/day	-1.14 lb/day	305,000 tons/yr	-0.056 tons/yr
Elevator to conveyor 2	0.0001 lb/ton	b	100 tons/hr	0.02 lb/hr	2,400 tons/day	0.36 lb/day	360,000 tons/yr	0.027 tons/yr
Conveyor 2 to stacker belt	0.0001 lb/ton	b	100 tons/hr	0.02 lb/hr	2,400 tons/day	0.36 lb/day	360,000 tons/yr	0.027 tons/yr
Stacker belt to stacker	0.0001 lb/ton	b	0 tons/hr	0.00 lb/hr	0 tons/day	0.00 lb/day	55,152 tons/yr	0.004 tons/yr
Stacker to clinker pile	0.0001 lb/ton	b	0 tons/hr	0.00 lb/hr	0 tons/day	0.00 lb/day	55,152 tons/yr	0.004 tons/yr
Baghouse #2	0.61 lb/hr	c	0 hr	0.00 lb/hr	19 hours	11.68 lb/day	8,210 hours	2.524 tons/yr
Total				-0.26 lb/hr		17.53 lb/day		3.03 tons/yr

References:

a - AP42 Table 11.19.2-2. Emission Factors for Crushed Stone Processing Operations.

b - AP42 Table 11.19.2-2. Conservatively assume 95 percent of transfer point emissions are captured and routed to a baghouse and five percent fugitive emissions.

c - Baghouse #2 limited to 0.014 grains per dry standard cubic foot.

TABLE C-3. PARTICULATE MATTER SUMMARY TABLE

	Limits in Tier I Permit Nov 2006			
	PM		PM_{10}	
	LBS/HR	T/YR	LBS/HR	T/YR
Kiln #1	11.61	50.83	9.86	43.21
Kiln #2	16.87	73.91	14.34	62.82
Kiln Subtotal:	*28.48*	*124.74*	*24.20*	*106.03*
Baghouse #1	2.26	9.91	1.92	8.42
Baghouse #2	1.44	0.32	1.22	0.27
Baghouse #3	0.51	2.14	0.44	1.82
Baghouse #4	0.32	0.61	0.27	0.52
Baghouse #5	-	-	-	-
Baghouse #6	0.63	2.78	0.54	2.36
Baghouse #7	1.59	5.21	1.35	4.43
Baghouse #8	2.09	6.86	1.78	5.83
Baghouse #9	2.82	9.26	2.40	7.87
Baghouse #10	0.31	0.67	0.26	0.57
Baghouse #11 [a]	0.08	0.35	0.08	0.35
Baghouse #12 [a]	0.21	0.90	0.21	0.90
Baghouse #13 [a]	0.14	0.63	0.14	0.63
Baghouse #14 [a]	0.11	0.47	0.11	0.47
Baghouse Subtotal:	*12.51*	*40.11*	*10.72*	*34.44*
Drilling, Blasting and Dozing	5.39	29.34	1.78	3.09
Limestone Receiving, Crushing and Storage	23.59	17.75	10.51	7.82
Iron Ore Receiving, Crushing and Storage	2.26	0.04	1.08	0.02
Silica Receiving, Crushing and Storage	10.18	2.63	4.52	1.18
Gypsum Receiving, Crushing and Storage	22.86	1.18	10.21	0.54
Silo Withdrawal, Conveying & Storage	0.42	1.48	0.19	0.68
Coal Handling	5.61	0.74	1.40	0.18
Clinker Receiving	-	-	-	-
#1 & #2 Clinker Coolers and Clinker Handling	33.25	16.84	7.47	6.75
Clinker Reclaim	0.17	0.77	0.09	0.38
Cement Kiln Dust Handling (see baghouses 11-14)	-	-	-	-
Finish Grinding and Associated Handling	3.19	5.24	1.53	2.41
Cement Loadout	15.83	4.04	7.91	2.00
Subtotal:	*122.75*	*80.05*	*46.69*	*25.05*
Paved Roads	46.52	16.12	10.01	3.47
Unpaved Roads	19.97	16.58	7.19	5.97
Piles	5.39	33.25	1.78	3.29
Process Fugitives Subtotal:	*194.6*	*146.0*	*65.7*	*37.8*
GRAND TOTAL	***207.14***	***186.11***	***76.39***	***72.22***

The Tier II permit includes limits for Baghouse 5, but that baghouse has been disconnected. In addition, the emission limits for Baghouses 9 and 10 are reversed in the Tier II permit.